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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BROOME, SAID A	

ART UNIT	PAPER NUMBER
2671	

DATE MAILED: 10/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/674,438	NOMURA, SHINPEI	
	Examiner	Art Unit	
	Said Broome	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5-7, 11-13 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata (US Patent 6,088,006) in view of Tatsuzawa (US Patent 6,441,844), in further view of Artitake et al. (US Patent 5,872,590).

Tabata teaches the limitation of claims 1, 5, 11, 16 and 18 that describes object data made up of polygons having 3D coordinates to be displayed in a stereoscopic view, as stated in column 2 lines 61-67 and column 3 lines 1-18, is converted to parallax camera coordinate system data with their origins at parallax cameras for left and right eyes, as stated in column 3 lines 20-25. Tabata also teaches the storage of the parallax coordinate system object data for the left eye and the right eye in a video memory in column 12 lines 8-17, and is illustrated in Figure 7 as step 62 and 63 respectively. Tabata also teaches what is disclosed in the preamble of claims 1-10 in Figure 7, claims 11-21 in Figure 6 and claims 16-21 also in Figure 6 as element 14, where a method, apparatus and storage medium for storing a program run in an apparatus for generating stereoscopic images are illustrated respectively. Tabata fails to teach the conversion of object data to be displayed in a planar view to reference camera coordinate system data with its origin at a reference camera, the storage of the reference camera coordinate system data for the

left and right eye and the synthesizing of the stereoscopic and planar image data. Tatsuzawa teaches the conversion of object data to reference coordinate system data to be displayed in a planar view with its origin at a reference camera in column 9 lines 21-23, where it is described that a two-dimensional, or planar, image is projected from a front video camera, or reference camera, as shown in Figure 1 as element 18M. Tatsuzawa also teaches image data is collected from a reference camera as described in column 4 lines 34-38 and is shown to be sent to a solid-picture generation unit in Figure 7 as element M, which in combination with the storage of the left and right images as taught by Tabata can be utilized to store the captured reference camera image data. Tatsuzawa also teaches the synthesizing of the image data for the right and left eyes drawn, or stored, in the video memory and displaying the mixed stereoscopic and planar objects in column 2 lines 48-59 where it is described that the front video signal from the reference camera, which displays the planar or two-dimensional view of the image, and the right and left stereoscopic views of the image are simultaneously projected on a monitor. Tabata and Tatsuzawa fail to teach that the parallax angles for the left and right eyes are predetermined. Aritake et al. teaches in column 10 lines 62-64 that the horizontal distance between the parallax cameras that contain equivalent angles of parallax is predetermined, therefore the parallax angles are also predetermined because angles of parallax contain a direct relationship to the distance between the camera which would enable the predetermination of the angles of parallax as well. It would have been obvious to one of ordinary skill in the art at to combine the teachings of Tabata, Tatsuzawa and Aritake et al. because this combination produces the conversion of object data to be displayed in a planar view with a reference camera as its origin and a stereoscopic view

with left and right cameras as its origin to generate a stereoscopic view that synthesizes views of left, right and front images, each of which is stored in memory, and enables a more visually pleasing view of a stereoscopic image without causing eyestrain.

Tabata and Tatsuzawa teach the limitations of claims 2, 6 and 17 except for the display of object in a planar view outside of a stereoscopic viewable range of the stereoscopic display device in a 3D coordinate space. Aritake et al. teaches that there is a 2D observing region, or planar view, which lies out of a 3D observing region, or 3D coordinate space, in which object data may be displayed in 2D in column 10 lines 17-24 and is also illustrated in Figure 7 as element 36. It would have been obvious to one of ordinary skill in the art to combine the teachings of Tabata, Tatsuzawa and Aritake et al. because this combination produces a planar view of the object data which lies outside of a stereoscopic viewable range of a stereoscopic display device therefore allowing observers outside of the 3D observing region of the stereoscopic display device to view 2D viewpoints of the object data.

Tabata teaches what is disclosed in claims 3, 7, 12 and 13 except for the conversion of object data to reference coordinate system data to be displayed in a planar view with its origin at a reference camera and the compression scaling during generation of the parallax coordinate system data such that the image formation position is within a stereoscopic viewable range of a stereoscopic display device with the parallax cameras having predetermined angles. Regarding claim 3, Tabata teaches the conversion of object data comprised of 3D data to parallax coordinate system data with the origins of the left and right eyes at parallax cameras (column 3 lines 20-25). The parallax camera coordinate system is shown in Figure 7 to be stored in memory for the left and right eye

as step 62 and 63 respectively. Tabata also teaches that the parallax data for each eye that is stored in memory is displayed using a stereoscopic display device in column 6 lines 20-23. Tabata fails to teach the parallax cameras having predetermined parallax angles and the scaling using the parallax coordinate system data to compress coordinates of the parallax data in the direction of the depth of the stereoscopic viewable range. Regarding claim 7, Tatsuzawa teaches the conversion of object data to reference coordinate system data to be displayed in a planar view with its origin at a reference camera in column 9 lines 21-23, where it is described that a two-dimensional, or planar, image is projected from a front video camera, or reference camera, as shown in Figure 1 as element 18M. Tabata and Tatsuzawa fail to teach the compression scaling during generation of the parallax coordinate system data such that the image formation position is within a stereoscopic viewable range of a stereoscopic display device with the parallax cameras having predetermined angles. Regarding claims 3, 7 and 12, Aritake teaches that scale conversion is used to enable the parallax coordinate system data is in the direction of the depth of a stereoscopic viewable range of a stereoscopic display as described in column 12 lines 16-29, where it is described that the coordinates of the parallax cameras for each eye are scaled converted to be within a stereoscopic viewable range. Aritake et al. also describes that the parallax cameras have predetermined horizontal distance between them in column 10 lines 62-64. Therefore, the parallax angles are predetermined as well because the angles are directly related to the distance of the camera positions which have equivalent parallax angles and are focused on the same geometric object as shown in Figure 17. It would have been obvious to one of ordinary skill in the art to combine the teachings of Tabata with Aritake et al. because this combination produces the conversion

of object data to be displayed in a stereoscopic view with left and right cameras as its origin to generate a stereoscopic view that enables a more visually pleasing view of a stereoscopic image without causing eyestrain within a stereoscopic viewable range by accurately displaying depth of the distance from an observer to an object using a stereoscopic display device.

Claims 4, 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata (US Patent 6,088,006) in view of Artitake et al. (US Patent 5,872,590).

Tabata teaches the limitation of claims 4, 8 and 19 in column 3 lines 20-25, where it is described that the conversion of object data comprised of 3D data to parallax coordinate system data with the origins of the left and right eyes at parallax cameras having parallax angles, which is illustrated in Figure 4 as θ. Tabata fails to teach the other limitations of claims 4, 8 and 19, which further comprise the narrowing of parallax angles during conversion to the parallax camera coordinate system data such that the objects are within a stereoscopic viewable range of a stereoscopic display device and are then displayed. Aritake et al. teaches the narrowing of the parallax angles in column 10 lines 1-17 where it is described that as image data is captured form the left and right parallax cameras, and thereby converted to a parallax coordinate system, the parallax angles are confined within the stereoscopic 3D observing region and are therefore narrowed to a parallax coordinate system within range of a stereoscopic display device as described in column 9 lines 53-58 and is illustrated as element 14 in Figure 6. It would have been obvious to one of ordinary skill in the art to combine the teachings of Tabata with Aritake et al. because this combination would produces the conversion of object data to be

displayed in a stereoscopic view with left and right camera as its origin to generate a stereoscopic view within a stereoscopic viewable range by narrowing the parallax angles during conversion to be within the stereoscopic view range which enables a more visually pleasing view of a stereoscopic image without causing eyestrain.

Claims 9, 10, 14, 15, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabata, Tatsuzawa and Aritake et al., and further in view of Hoglin (US Patent 5,949,477).

Tabata, Tatsuzawa and Aritake et al. teach the limitations of claims 9, 10, 15, 20 and 21 (see Tabata, column 10 lines 6-9) where it is described that an operator inputs the angle of the parallax camera for the left and right eye. However, this combination of prior art fails to teach that the angles are adjustable in real time and are continuously and gradually varied as a result of the adjustment. Hoglin teaches that the angles of the parallax cameras are adjustable at all times by an observer in column 4 lines 45-47, therefore the angles are also continuously and gradually varied as a result of the adjustment by operations of the observer, as described in column 4 lines 29-45. It would have been obvious to combine the teachings of Tabata, Tatsuzawa and Aritake et al. with Hoglin because this combination would provide for the continuous adjustment of parallax camera angles in real time depending on user input that would allow the adjustment of parallax camera during generation of stereoscopic images, resulting in an improved display.

Regarding claim 14, Tabata teaches the geometric unit, which comprises the stereoscopic image generating apparatus illustrated in Figure 6 as element 11, and the

input unit also illustrated in Figure 6 as element 12. Tabata , Tatsuzawa and Aritake et al. fail to teach the adjustment of the camera parallax angles in real time by the geometric unit from signal input form the input unit. Hoglin teaches that the angles of the parallax cameras are adjustable at all times by an observer in column 4 lines 45-47. Therefore it would have been obvious to one of ordinary skill in the art to combine the teachings of Tabata, Tatsuzawa and Aritake et al. with Hoglin because this combination would provide an adjustment of parallax camera angles in real time by a user that enables an improvement in the generated stereoscopic images due to the ability of the observer to adjust the parallax angles while viewing the image.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The other references listed on the attached PTO-892 form are made of record because they pertain to stereoscopic display methods and systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Said Broome whose telephone number is (571)272-2931. The examiner can normally be reached between 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571)272-7782. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Broome SB
9/21/2005

ULKA J. CHAUHAN
PRIMARY EXAMINER